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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,853	10/23/2003	Steven M. Arnold	LEW 17,510-1	3668

26311 7590 12/06/2004
 NASA GLENN RESEARCH CENTER
 21000 BROOKPARK ROAD
 OFFICE OF CHIEF COUNSEL; MAIL STOP 500-118
 CLEVELAND, OH 44135

EXAMINER

NGUYEN, XUAN LAN T

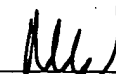
ART UNIT	PAPER NUMBER
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3683

DATE MAILED: 12/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No. 10/693,853	Applicant(s) ARNOLD ET AL.	
Examiner Lan Nguyen	Art Unit 3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 09 September 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-11 and 15 is/are pending in the application.
4a) Of the above claim(s) 4 and 5 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3, 6-11 and 15 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 09 September 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
- Certified copies of the priority documents have been received.
 - Certified copies of the priority documents have been received in Application No. _____.
 - Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: approved drawings.

DETAILED ACTION

Drawings

1. The drawings were received on 9/9/2004. These drawings are approved.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6-11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (USP 6,095,295) in view of Johnston et al. (USP 6,318,522) and further in view of Rosaen (USP 3,448,751).

Park et al. show a magnetorheological device, as in the present invention, comprising: a generally cylindrically shaped housing 113 having cylindrical walls and a divider 115 within said housing; said housing includes an integral end portion 121 and an end plate, not numbered but shown with the bolts on top of figure 1, removably attached to said cylindrically shaped housing; a rotary impeller having a paddle 112 mounted within said housing, said rotary impeller sealingly engaging said divider, said paddle in combination with said cylindrical walls, said divider, said integral end portion of said housing, and said end plate of said housing form a first chamber 116 A and a second chamber 116B, a magnetorheological fluid residing in said chambers; a

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passageway 125-129 interconnecting said first and second chambers; and, a coil 122 enabling the viscosity of the magnetorheological fluid to be varied, see from column 3, line 67 to column 4, line 11. Park lacks a second paddle in the structure of the rotary impeller. Johnston et al. teach the concept of varying the number of paddles from one to a multiple of paddles in column 3, lines 2-7. Specifically, Johnston shows in figure 2, a magnetorheological device with 2 paddles 26, 27. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Park's magnetorheological device to have comprised two paddles as taught by Johnston to further increase the adjustability of the damping capability of the device. Park shows the coil 122 being located at the end of passageway 125-129 while claim 1 requires the coil to be surrounding a portion of the passageway. Rosaen teaches the concept of surrounding the passageway 18 of the MR fluid with a coil 20 as an effective way to vary the viscosity of the fluid in the passageway to control the flow, see column 2, lines 49-53. It would have been further obvious to one of ordinary skill in the art at the time the invention was made to have further modified Park's device with the coil surrounding the passageway such as taught by Rosaen wherein the magnetic field would be stronger and it would have been a much more effective way to vary the viscosity of the MR fluid as shown by Rosaen.

Re: claims 2 and 3, the Examiner takes an Official Notice that it is old and well known that electric currents can be either a direct current or an alternate current and would have been within a routine for one of ordinary skill in the art to have employed a direct current or an alternate current for use with the coil.

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Re: claims 6 and 7, Park shows said passageway is interior to the housing 113 in sections of 128, 129 and exterior to the housing 113 in sections 125-127.

Re: claims 8, 9 and 11, Park further shows a first edge seal 136 extending from said first paddle and would have comprised a second edge seal for the second paddle, as modified; a third inner seal 138 affixed to said integral end portion and a fourth seal 137 affixed to said end plate, as shown.

Re: claim 10, Park shows said passageway 125-129 to be a tortuous path.

Re: claim 15, Park shows magnetorheological device, as in the present invention, comprising: a housing 113 having a divider 115 extending inwardly from said housing, a hub 111 having a first impeller 112 rotatably mounted within said housing; said first impeller straddling said divider, as shown, a first chamber 116A formed by said first impeller and said divider and a second chamber 116B formed by said first impeller and said divider, a passageway 125-129 interconnecting said first and second chambers, magnetorheological fluid in said chambers and said passageway; a magnetic field generated by a coil 122 such that an increase in said field increases the viscosity of the magnetorheological fluid, see from column 3, line 67 to column 4, line 11; said hub and impellers rotatably pushing said magnetorheological fluid against said divider such that said magnetorheological fluid is in compression. Park lacks a second paddle in the structure of the rotary impeller. Johnston et al. teach the concept of varying the number of paddles from one to a multiple of paddles in column 3, lines 2-7. Specifically, Johnston shows in figure 2, a magnetorheological device with 2 paddles 26, 27. It would have been obvious to one of ordinary skill in the art at the time the invention was

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made to have modified Park's magnetorheological device to have comprised two paddles as taught by Johnston to further increase the adjustability of the damping capability of the device. Note that, as modified, Park's second chamber would be formed by the second paddle and the divider. Park shows the coil 122 being located at the end of passageway 125-129 while claim 15 requires the coil to be surrounding a portion of the passageway and to form a plug. Rosaen teaches the concept of surrounding the passageway 18 of the MR fluid with a coil 20 as an effective way to vary the viscosity of the fluid in the passageway from having no effect in the MR fluid to forming a plug to completely preventing flow in order to control the flow in passageway 18, see column 2, lines 49-53. It would have been further obvious to one of ordinary skill in the art at the time the invention was made to have further modified Park's device with the coil surrounding the passageway such as taught by Rosaen wherein the magnetic field would be stronger and it would have been a much more effective way to vary the viscosity of the MR fluid from having no effect in the MR fluid to forming a plug to completely preventing flow in order to control the flow in the passageway as taught by Rosaen.

Response to Arguments

4. Applicant's arguments with respect to the claims have been considered and found persuasive. A new ground of rejection has been set forth above.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Notar is cited for figure 1 where coil 7 is surrounding the passageway 3 with MR fluid 2 inside; and figure 3 with a permanent magnet 9 surrounding the MR fluid 2' in passageway 3'.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Nguyen whose telephone number is 703-308-8347. The examiner can normally be reached on M-F, 8 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on 703-308-0830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lan Nguyen
Patent Examiner
Art Unit 3683

Lan Nguyen 12/02/04

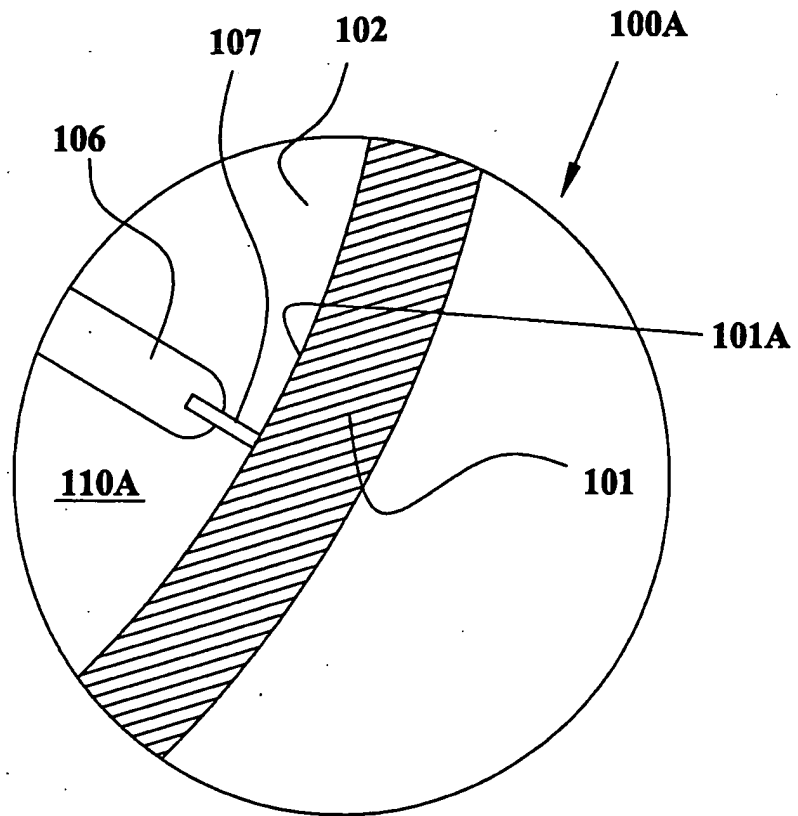
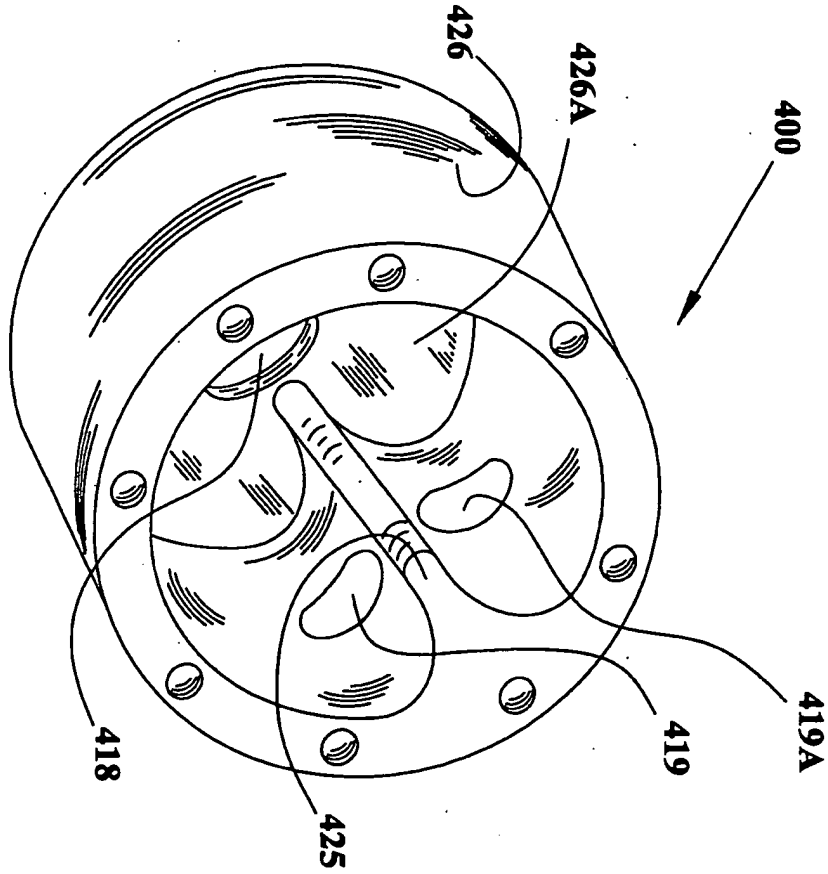


FIG. 1A

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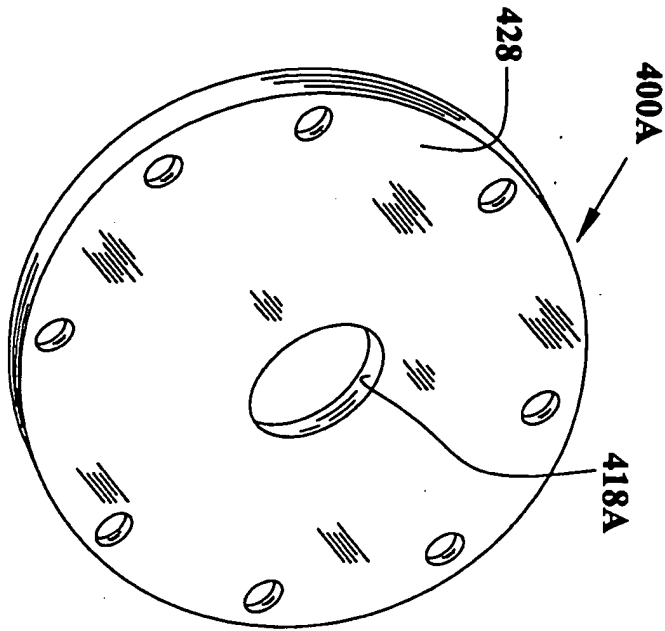
FIG. 4



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FIG. 4A



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